Subject: Re: Points in a rectangle with an angle Posted by Craig Markwardt on Wed, 05 Apr 2006 16:53:25 GMT View Forum Message <> Reply to Message

JJMeyers2@gmail.com writes:

> Hello.

>

- > I have a problem in IDL that I was wondering if anyone has any idea how
- > it can be done.
- > I have a set of coordinates and I am trying to figure out how many of
- > the coordinates are inside a rectangle. I know the coordinates of the 4
- > edges of the rectangle but the problem is that the rectangle is at an
- > angle in the x,y axis (I know the slope). I can not just say
- > coords=where((x LE xmax) AND (x GT xmin) AND (y LE ymin) AND (y GT
- > ymax))
- > because that will give me coordinates of a rectangle without an angle
- > (parallel to the y axis).
- > Is there any function in IDL that might be doing that?

Not really, but it's pretty easy to do yourself.

Assume that the rectangle is centered at (XCENT,YCENT) and has a WIDTH and HEIGHT in its body coordinate system. Also, assume that the rectangle is rotated THETA degrees counterclockwise from the "world" X axis.

```
;; Translate to center-of-box coordinates (xp,yp)
xp = x - xcent
yp = y - ycent
;; Rotate into box coordinates (u,v)
u = cos(theta*!dtor)*xp - sin(theta*!dtor)*yp
v = sin(theta*!dtor)*xp + cos(theta*!dtor)*yp
;; Do the selection
wh = where(abs(u) LT width/2 AND abs(v) LT height/2)
```

This takes advantage of the fact that in center-of-box coordinates, half of the box is left and right of the origin, and above and below the origin. The only tricky part is getting the signs right, which I think I did.

Craig